We Claim

1. In combination with a plate-shaped object having a surface with a peripheral region, a protection configuration for the plate-shaped object, comprising:

a protective device including at least one holding element and a polymer cushion;

said at least one holding element having a planar edge;

said at least one holding element having a protective element configured to protect the surface of the plate-shaped object;

said polymer cushion being disposed on said planar edge and configured to contact the peripheral region of the surface of the plate-shaped object; and

said polymer cushion being formed of a polymer having at least one property selected from the group consisting of a viscosity and an adhesiveness, at least one of the viscosity and the adhesiveness being greater when tensile forces are exerted on the protective device orthogonally in relation to the peripheral region of the plate-shaped object than when shearing forces are exerted on the protective device parallel to the peripheral region of the plate-shaped object.

2. The protection configuration according to claim 1, wherein the plate-shaped object is a lithographic mask.

3. The protection configuration according to claim 1, wherein said polymer of said polymer cushion is a material selected from the group consisting of TESA 7475, polydimethoxysilane and EASTOTAC PSAs based on low-molecular-weight aliphatic hydrocarbon resins.

4. The protection configuration according to claim 1, wherein:

said at least one holding element is a frame with a wall extending laterally all around, said planar edge is provided on said wall such that said frame can be placed with said polymer cushion onto the peripheral region of the plate-shaped object; and

said protective element is a membrane stretched over said frame and covering said frame entirely such that said protective device forms a protective shroud.

5. The protection configuration according to claim 4, wherein:

said planar edge of said wall is a first edge;

said frame has a second edge provided substantially parallel to said first edge; and

said membrane is fastened to said second edge.

6. The protection configuration according to claim 4, wherein said membrane is formed of a material selected from the group consisting of a polymer and a crystalline material.

7. The protection configuration according to claim 4, wherein said wall of said frame has a height of 5 mm to 10 mm, measured from the surface of the plate-shaped object to the membrane.

8. The protection configuration according to claim 4, wherein:

said protective device is a pellicle frame; and

said polymer cushion is provided on said planar edge facing away from said membrane.

9. The protection configuration according to claim 1, wherein:

said protective device is a closable box for receiving the plate-shaped object;

said closable box has a cover and a base; and

projections are provided as holding elements at said cover and said base, said projections have respective planar edges with polymer cushions disposed on said planar edges such that the plate-shaped object can be secured between said polymer cushions of said projections.

10. The protection configuration according to claim 9, wherein said closable box has a viewing/inspection window.

11. The protection configuration according to claim 9, wherein said cover of said closable box is removable by one of a pushing movement and a turning movement.

12. The protection configuration according to claim 1, wherein:

said protective device has a first limit value for exertable orthogonal tensile forces that are too small to overcome an adhesion of said polymer cushion, wherein the first limit value is selected large enough such that the adhesion of said polymer cushion is not overcome during usual handling and such that said protective device remains fixed to the surface of the plate-shaped object; and

said protective device has a second limit value for exertable parallel shearing forces that are too small to overcome an adhesion of said polymer cushion, wherein the second limit value is selected small enough such that the adhesion of said polymer cushion can be overcome by manual or mechanical lateral displacement.

13. A method of using a protected plate-shaped object, the method which comprises:

providing a configuration with a plate-shaped object and a protective device having at least one holding element with a planar edge, a protective element for protecting at least one surface of the plate-shaped object, a polymer cushion disposed on the planar edge and in contact with a peripheral region of the surface of the plate-shaped object, the polymer cushion being formed of a polymer having at least one of a viscosity and an adhesiveness that is greater when tensile forces are exerted on the protective device orthogonally in relation to the peripheral region of the plate-shaped object than when shearing forces are exerted on the protective device parallel to the peripheral region;

separating the plate-shaped object and the protective device by exerting an adequate shearing force resulting in a lateral relative movement of the plate-shaped object and the protective device for overcoming the adhesion;

using the plate-shaped object for an intended purpose; and

connecting the plate-shaped object and the protective device to one another by bringing the plate-shaped object and the protective device orthogonally together with respect to the surface and the edge.

14. The method according to claim 13, which comprises using a lithographic mask as the plate-shaped object.

15. The method according to claim 13, which comprises cleaning the plate-shaped object of residues of the polymer cushion subsequent to the separating step.

16. The method according to claim 15, which comprises carrying out an irradiation step with a xenon UV excimer lamp under an O_2/N_2 gas mixture for cleaning the plate-shaped object.

17. The method according to claim 13, which comprises using, as the polymer of the polymer cushion, a material selected

from the group consisting of TESA 7475, polydimethoxysilane and EASTOTAC PSAs based on low-molecular-weight aliphatic hydrocarbon resins.

18. The method according to claim 13, which comprises:

providing the at least one holding element as a frame with a wall extending laterally all around, and providing the planar edge on the wall such that the frame can be placed with the polymer cushion onto the peripheral region of the plate-shaped object; and

using, as the protective element, a membrane stretched over the frame and covering the frame entirely such that the frame and the membrane form a protective shroud.

19. The method according to claim 18, which comprises:

providing a further edge of the frame substantially parallel to the edge; and

fastening the membrane to the further edge.

20. The method according to claim 18, which comprises forming the membrane of a material selected from the group consisting of a polymer and a crystalline material.

21. The method according to claim 18, which comprises providing the wall of the frame with a height of 5 mm to 10 mm, measured from the surface of the plate-shaped object to the membrane.

22. The method according to claim 18, which comprises:

using a pellicle frame as the protective device; and

providing the polymer cushion on the planar edge facing away from the membrane.

23. The method according to claim 13, which comprises:

using, as the protective device, a closable box for receiving the plate-shaped object;

providing the closable box with a cover and a base; and

providing projections as holding elements at the cover and the base and providing the projections with respective planar edges with polymer cushions disposed on the planar edges such that the plate-shaped object can be secured between the polymer cushions of the projections.

24. The method according to claim 23, which comprises providing a viewing/inspection window for the closable box.

25. The method according to claim 23, which comprises providing the cover of the closable box such that the cover can be removed by one of pushing and turning the cover.

26. The method according to claim 13, which comprises:

selecting a first limit value for exertable orthogonal tensile forces that are too small to overcome an adhesion of the polymer cushion by selecting the first limit value large enough such that the adhesion of the polymer cushion is not overcome during usual handling and such that the protective device remains fixed to the surface of the plate-shaped object; and

selecting a second limit value for exertable parallel shearing forces that are too small to overcome an adhesion of the polymer cushion by selecting the second limit value small enough such that the adhesion of the polymer cushion can be overcome by manual or mechanical lateral displacement.

27. The method according to claim 23, which comprises:

providing the closable box with a viewing/inspection window; and

using the viewing/inspection window for an inspection with DUV light.

28. The method according to claim 27, which comprises using a wavelength range of 157 nm to 365 nm for the inspection.